

NORTHEAST UTILITIES



The Connecticut Light And Power Company
Western Massachusetts Electric Company
Holyoke Water Power Company
Northeast Utilities Service Company
Northeast Nuclear Energy Company

General Offices: Selden Street, Berlin Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06414-0270
(203)665-5000

Re: 10CFR50.73(a)(2)(i)

July 24, 1991
MP-91-614

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

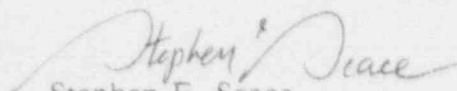
Reference: Facility Operating License No. NPF-49
Docket No. 50-423
Licensee Event Report 91-016-00

Gentlemen:

This letter forwards Licensee Event Report 91-016-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(i), any operation or condition prohibited by the plant's Technical Specifications.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY


Stephen E. Scace
Director, Millstone Station

SES/NDH:dlr

Attachment: LER 91-016-00

cc: T. T. Martin, Region I Administrator
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3
D. H. Jaffe, NRC Project Manager, Millstone Unit Nos. 1 and 3

9108050079 910724
PDR ADOCK 05000423
S PDR

Cent No 10264578645
IF22
11

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this information collection request: 50 0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (D-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1)

Millstone Nuclear Power Station Unit 3

DOCKET NUMBER (2)

0 5 0 0 0 4 2 3

PAGE (3)

1 OF 0 4

TITLE (4)

Inoperable Power Operated Relief Valve Due to Improper Re-installation of a Control Switch

EVENT DATE (5)

LER NUMBER (6)

REPORT DATE (7)

OTHER FACILITIES INVOLVED (8)

MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES
0	6	2	4	9	1	9	1	1	0 5 0 0 0 0
0	6	2	4	9	1	0	1	6	0 0 0 7 2 4 9 1
									0 5 0 0 0 0

OPERATING MODE (9)

THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following): (1)

POWER LEVEL (10)

1 0 0

20.402(b)

20.405(a)(1)(i)

20.405(a)(1)(ii)

20.405(a)(1)(iii)

20.405(a)(1)(iv)

20.405(a)(1)(v)

20.402(c)

50.36(b)(1)

50.36(c)(2)

50.73(a)(2)(i)

50.73(a)(2)(ii)

50.73(a)(2)(iii)

50.73(a)(2)(iv)

50.73(a)(2)(v)

50.73(a)(2)(vi)

50.73(a)(2)(vii)(A)

50.73(a)(2)(vii)(B)

50.73(a)(2)(ix)

73.71(b)

73.71(c)

OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

Nelson D. Hulme, Senior Engineer, Ext. 5398

TELEPHONE NUMBER

AREA CODE

2 0 3 4 4 7 - 1 7 9 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

X NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 1127 hours on June 24, 1991, with the plant at 100% power in Mode 1, at 2250 psia and 587 degrees Fahrenheit, the control switch for Power Operated Relief Valve (PORV) 3RCS*PCV455A was found to operate incorrectly. The automatic position and closed position were switched. The investigation was initiated because the PORV test light did not indicate as it should during a quarterly slave relay surveillance test.

The root causes for the event were inadequate information detailing the precise switch that required modification per an approved design, and a failure to perform a retest on a control switch from which its wiring block had mistakenly been removed and then reinstalled incorrectly. As a consequence, the PORV was in the closed position when the control handle was placed in the automatic position. Had the correct switch been removed initially, then a proper retest would have been assured for all work performed. Had a retest been performed, the error would have been identified and corrected. Individuals involved were counselled on the need to give complete information to personnel performing design work and the requirements to perform adequate retests.

The lessons learned from this incident will be incorporated into departmental training and, retest guidelines for removal of any component from a panel will be developed and promulgated by October 25, 1991.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

estimated burden per response to comply with this information collection request: 50.0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1) Millstone Nuclear Power Station Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 4 2 3 9 1 -	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
			0 1 1 6 -	0 0	0 2	OF	0 4

TEXT (if more space is required, use additional NRC Form 366A a) (17)

I. Description of Event

At 1127 hours on June 24, 1991, with the plant at 100% power in Mode 1, at a pressure of 2250 psia and a temperature of 587 degrees Fahrenheit, the control switch for Power Operated Relief Valve (PORV) 3RCS*PCV455A was found to operate incorrectly. The automatic position and close position were switched. The investigation was initiated because the PORV test light did not indicate as it should during a quarterly slave relay surveillance test.

Shift supervisory personnel immediately declared 3RCS*PCV455A inoperable. As required by Technical Specifications, the associated block valve was closed and power was removed from the block valve within one hour of discovering the problem. Within 30 hours of the discovery, the inoperable switch was replaced and the circuit was tested for proper operation. The block valve was then opened and the PORV was returned to an operable status.

II. Cause of Event

The following are the root causes for this event:

- Information in a work package did not provide sufficient detail for required switch modifications per an approved design. As a result, an electrical technician selected the wrong switch for modification.
- Verification was not performed on the control switch after the switch was incorrectly re-installed after inspection. Had a work order been processed to verify proper operation, the error would have been immediately discovered and the problem corrected.

On March 25, 1991, while the plant was shutdown for refueling, a work order was initiated to correct an annunciator design problem associated with the "arm/block" switch for the PORV. Annunciator wires on the switch needed to be transferred to a set of spare switch contacts. Because of space constraints, it was necessary for the switch to be physically removed from the control panel in order to gain access to the wiring lugs. Removal can be accomplished by either unscrewing the switch collar on the top panel and then lowering the entire switch underneath the panel, or by unscrewing the control block from the switch handle directly underneath the panel. The electrical technician incorrectly selected the PORV "control switch" rather than the "arm/block" switch. He chose to remove the control block from the handle to gain access. Prior to doing any other work, the technician reviewed the work package and noted the discrepancies between the "arm/block" wiring diagram and the actual wiring of the "control" switch. Based on these discrepancies, and as he was unsure of what the resolution was, the technician reinstalled the control block onto the handle and documented the problem in the work log for the next shift.

As the control block lugs and wiring are arranged symmetrically, it is possible to install the control block in two ways. In this case, the technician reinstalled the block opposite to the way it was supposed to be. The switch has three positions: "Close - Auto - Open". With the contact block installed incorrectly, the indicated and actual switch operation was:

<u>Indicated</u>	<u>Actual</u>
Close	Auto
Auto	Close
Open	Open

The oncoming shift electrical technicians were aware that the "control" switch had been removed. However, they assumed the removal was done from above the panel with the entire switch dropped down. Under this premise, they considered no retest was necessary. The oncoming shift reviewed the work package and identified that modifications should be made to the "arm/block" switch. Work was completed and retests were performed to ensure the "arm/block" and associated annunciator circuits were functioning correctly, but no retests were done on the PORV "control" switch.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Estimated burden per response to comply with this information collection request: 50-6 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0106), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Millstone Nuclear Power Station Unit 3	0600043391	01	6	0	03	OF	04

TEXT: If more space is required, use additional NRC Form 306A (3-17).

III. Analysis of Event

This event is reportable in accordance with 10CFR50.73(a)(2)(i), as any operation or condition prohibited by the plant's Technical Specifications (TS).

Millstone Unit 3 has two pressurizer PORVs which are designed to prevent a high reactor coolant system (RCS) pressure reactor trip for all postulated transients up to and including the step load decreases with steam dump. The PORVs also limit the opening of the pressurizer safety valves and provide cold overpressure relief protection if necessary. TS 3.4.9.3 requires cold overpressure protection in Modes 4, 5, and 6 from one of the following:

- Two residual heat removal (RHR) suction relief valves
- Two PORVs
- The RCS depressurized with a vent greater than or equal to 5.4 square inches

Credit for cold overpressure protection was maintained by two RHR suction relief valves from March 25, the date this event made PORV 3RCS*PCV455A inoperable, until April 1. From April 1 until April 9, the PORVs were credited for protection. On April 9, the plant entered Mode 3 at which time the Cold Overpressure Protection System (COPS) was blocked. COPS serves as a backup to the administrative procedures used by the Operations department for pressure control during low RCS temperature conditions. Analyses indicate that one PORV is sufficient to prevent pressure limits being exceeded for anticipated mass and heat input transients. During this 9-day period, PORV 3RCS*PCV456 was available to relieve pressure automatically. 3RCS*PCV455A could have been opened manually since the control switch block reversal affected only the "automatic" and "close" positions. If a single failure had prevented the operable PORV from opening, an operator would have been able to manually open PORV 3RCS*PCV455A. Although the PORVs were designated for cold overpressure protection on April 1, both RHR suction reliefs were still available until April 5, 1991. At this time Train B RHR suction relief was isolated, but Train A RHR suction relief remained in service. Train A relief was isolated April 8, just before plant startup. Thus, except for one day, at least one PORV and one RHR suction relief were available until COPS was blocked.

The PORVs were available to be operated manually as required by TS 3.4.4 for Modes 1, 2, and 3. PORVs are not considered in the design basis overpressure event during Modes 1, 2, and 3. In conjunction with the action of the reactor protection system, the three spring loaded pressurizer safety valves are designed to prevent exceeding 110 percent of system design pressure for all credible overpressure events including the maximum pressure surge resulting from a complete loss of load.

The PORVs may be used for other purposes such as depressurization during safety grade cold shutdown, emergency feed and bleed, and decreasing primary plant pressure during recovery from a steam generator tube rupture incident. However, the incorrect wiring of 3RCS*PCV455A would not have affected PORV use since only manual operation is necessary for these evolutions.

Automatic primary pressure relief during Anticipated Transient Without Scram (ATWS) would have been effected. With one PORV unavailable for automatic operation, the probability of exceeding the ASME Boiler and Pressure Vessel code Level C service limit criteria of 3200 psig would have been increased for ATWS events. However, the probability of the most limiting ATWS events occurring in the time frame during which one PORV was unavailable is very small.

In consequence of the analysis of this incident presented in the above paragraphs, the inability of PORV 3RCS*PCV455A to operate automatically during the 89-day period its control switch was improperly installed did not pose a significant degradation of plant safety. There would have been no significant hazard to the health and safety of the public were the PORVs required to operate automatically during an overpressure event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Estimated burden per response to comply with this information collection request: 50.0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1) Millstone Nuclear Power Station Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 4 2 3 9 1	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0 1 6	0 0	0 4	OF	0 4	

TEXT (if more space is required, use additional NRC Form 365A-6) (17)

Corrective Action

The individuals involved were counselled on the need to verify proper switch functions whenever a switch is removed from its normal location, even if no work was performed or no critical components were disturbed. It was emphasized that even if no work or adjustments were performed, wires may be broken or otherwise disturbed which could make the switch inoperable.

The design engineer was advised that even though the package may be clear in its design intent, an individual actually performing the work may become confused without more specific information, including a walkdown just prior to performing the work. In this case, the control switch is located on the horizontal portion of the panel while the "arm/block" switch is located nearby, on the vertical portion. If the work package had contained explicit location information, this event would not have occurred.

The lessons learned from this incident will be incorporated into departmental training. Retest guidelines for removal of any component from a panel will be developed and promulgated. These actions will be completed by October 25, 1991.

Additional Information

The control switch for 3RCS*PCV455A is a GE type CR2940 with three maintained positions of close, automatic, and open. The PORV is an electrically controlled, pressure actuated, poppet type relief valve manufactured by Crosby Valve & Gauge Company.

The events listed below are similar to this event:

<u>LER Number</u>	<u>Title</u>
88-005	Cold Overpressure Protection System Fails to Operate during Pressure Transient
89-002	Control Building Purge Exhaust Fan Isolation Valve Position Indication Error Due to Personnel Error

LER 88-005 documents the failure of COPS to operate because the solid state protection system was not available to provide a signal. The root cause for this event was a lack of procedure for arming COPS. The action to prevent recurrence included the preparation of a procedure for arming COPS and increased operator training. While LER 88-005 and this LER resulted in cold overpressure protection not being available when required, the root cause is different from this LER. Therefore the corrective actions for LER 88-005 would not have prevented occurrence of the event discussed in this LER.

LER 89-002 documents the failure to place a lifted lead on the correct terminal. A procedure to provide independent verification when lifting or installing electrical connections was implemented. Since no leads were lifted, independent verification was not an issue in the event described by this LER. Therefore, the corrective actions for LER 89-002 would not have prevented occurrence of the event discussed in this LER.

EIS CODESSystems

Reactor Coolant System -- AB

Components

Relief Valve -- PCV

Control Switch -- HS